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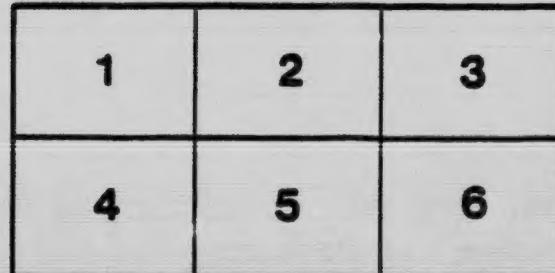
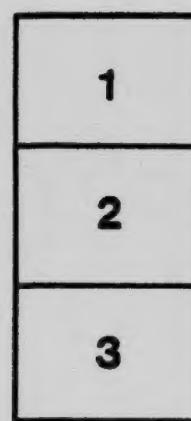
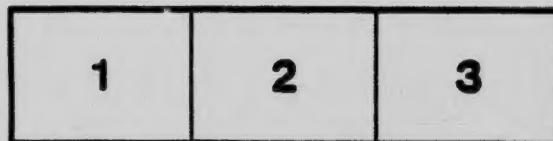
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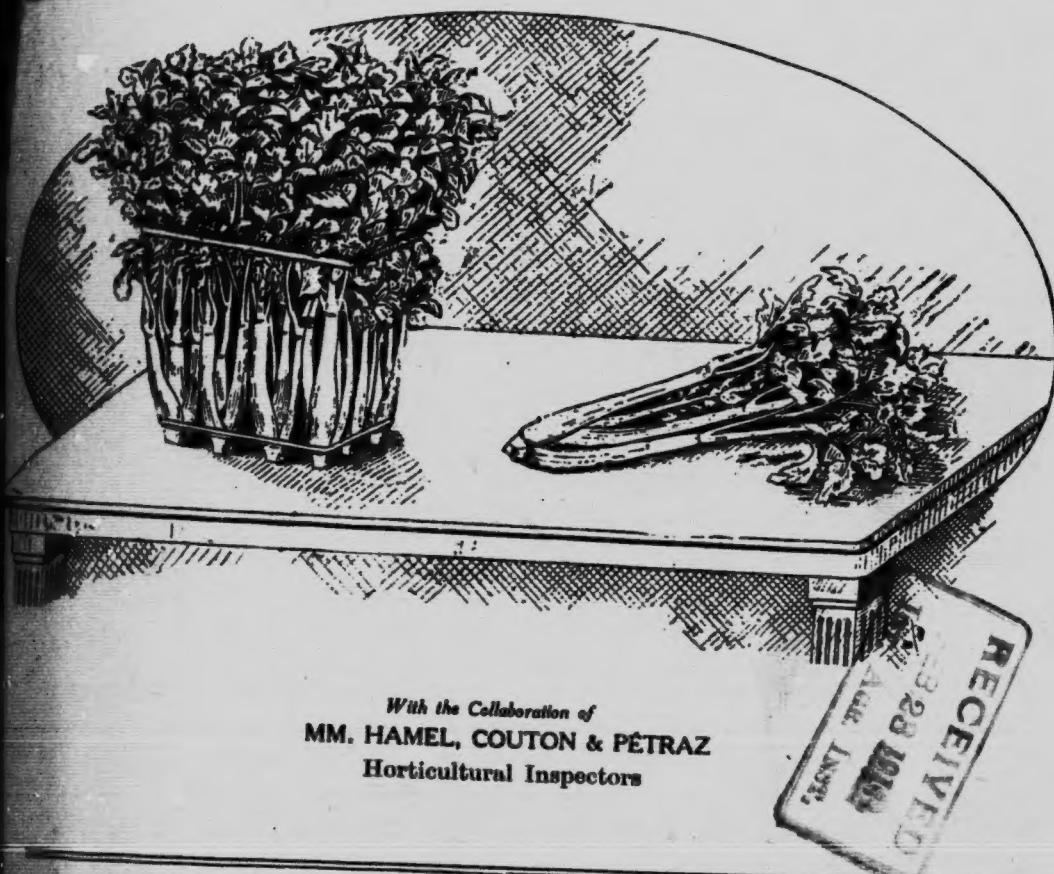
MAY, 1917

BULLETIN No. 39

# CELERY CULTURE

— BY —

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Chief of the Horticultural Service



With the Collaboration of  
**MM. HAMEL, COUTON & PÉTRAZ**  
Horticultural Inspectors



Published by order of the Hon. Jos.-Ed. Caron, Minister of Agriculture of the Province of Quebec.

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# CELERY

(*Apium graveolens, L ; French, Céleri*)

**Leaf-vegetable and fruit-vegetable belonging to the family of the  
Umbelliferae**

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## Species and use :

This biennial plant which grows in a wild state in most of the swampy regions of Europe, has been modified by the work of man and transformed in two species: ribbed-celery, of which we consume, uncooked, cooked or in salad, the fleshy leaf-stalk, and the celeriac, the tuberous root of which is rather consumed when cooked.

Though not very nourishing and even indigest when consumed uncooked, it however furnishes one of the best seasoners, so much because of its flavor as for its medicinal properties. Also, is it because its use tends to generalize in this country and because we must import great quantities of it every year at great cost, that the farmers living near the cities will find it profitable to devote more time to the growing of ribbed-celery which yields from 12,000 to 30,000 plants, and the returns of which may reach from \$600,00 to \$1,200,00, per acre.

## RIBBED-CELERY

### ROTATION : 1st YEAR

## Requirements :

This is the kind which is in greater demand on the market. In order to meet the exigencies of the consumption and command a remunerative selling price, the celery stalks must be well blanched, full, very fleshy, juicy, crisp and not fibrous. This we will obtain, in using only the best varieties, in selecting the proper ground and in paying assiduous care to its culture. Moreover, it is necessary that the celery plants be well washed, the roots severed in the proper manner, tied in one dozen bunches and shipped in crates. Finally, so as to satisfy the demand, growers must cultivate early and late varieties of celery.

**Varieties.**—They are quite numerous, but the following are considered the best:

1.—**Early** : *Golden self-blanching celery* or *Paris Golden Yellow*, also *Chemin*. A very early variety, compact, wide stems, full, fleshy, of a yellow ivory color, height, 16 to 18 inches, foliage golden: the most recommendable.

*White Plume*. End summer variety, of smaller yield than the former, ribs slender and inclined to become hollow length 18 to 22 inches with spreading foliage of a silvery white color; delicious flavor.

Though the ribs of these two varieties of celery are self-blanching to a very nice white tinge, they must, however, be submitted to etiolation.

2.—**Late** : *Giant Pascal* or *white solid celery*. A very productive variety and one of those that keep better in a cellar. Vigorous, ribs long and dumpy, upright, rarely fibrous, readily blanching, deep green foliage, 28 to 32 inches high.

*Dobbie's invicible celery*. A variety much like *Giant white solid celery*, with very wide stems.

#### Sowing :

The celery seed is very small and its germination, very slow and capricious; taking 10 to 24 days to come out. Though it can germinate after eight years, it is always better to procure fresh seed, one ounce of which will give about 4500 plants.

Either in the case of early or late celery, five to eight months usually elapse between the date of sowing and that of the crop. Early varieties must then be sown in February or March in order to be gathered in August, and the late varieties in April to have a crop in October.

*Early varieties.*—Seedlings in boxes are made in February, in the house, seeing that it is not possible to sow in beds at that time. Wooden half-boxes, sides measuring 14 x 24 inches, and 6 inches deep, with two or three holes in the bottom to insure drainage are the most suitable, as they can be moved easily. After having deposited a layer of gravel, three inches thick, to permit of a good drainage, they are thoroughly filled, shaking well when sifting, with compost mixed with sand, the surface of which is leveled and pressed by means of a piece of board. After sowing broadcast, or in rows 2 inches distant, celery seed mixed with loose earth or sifted sand, the soil is firmed again. If we prefer to sow the seed alone and cover by sifting loose compost on it, this covering shall then not exceed 1-8 inch in height. After seedlings have been made, the earth

is copiously moistened, if dry, and the boxes placed near the windows that receive more sunlight in the room of a house wherein temperature is maintained sufficiently high. Afterwards, watering with chilled off water shall not be too plentiful but frequent enough however to prevent the surface from drying. As soon as the seedlings appear, the boxes will be turned so that the light may reach all plants. When these have formed two or three leaves, that is when they are 1 to 2 inches high, they will be transplanted about 2 inches apart in all directions, into other boxes, the compost of which will be about 4 inches thick, taking care to shorten their straight root at the extremity of the leaves and to water immediately before or after transplanting. It is to every horticulturist's knowledge that early seedlings are more inclined to grow high than those made later on. And as the effect of transplanting is to develop the rooting to the detriment of the stem, the operation will be repeated fifteen to twenty days later so that dumpy plants be obtained.

This time, transplanting will be made into hot beds, in warm weather, allowing 6 to 8 inches in all directions, if the plants of celery are to remain there until the crop, and 2 inches if they are to be transplanted again, after the extremity of their largest leaves and roots has been severed. In both cases, we will carefully see that the air is eliminated during the four days following the operation, as the plants need much heat at this moment. Some horticulturists even advise to guard the beds against the rays of the sun during that time, gradually removing the mats afterwards. Experience having proved that this is only a matter of practice, we can surely use both methods successfully. Immediately in the morning of the 4th day, an abundant watering with chilled off water will be made, using a watering can with a very thin strainer. Afterwards we will regulate the waterings and ventilation on the outside temperature and according to the actual vegetation. It is important to prevent the surface of the bed from drying and not to leave the plants exposed to cold weather for a too long time. Then, when the sun shines, we will water in the morning, every three or four days, and when it is cold we will ventilate with caution, because in the first place the plants would burn and they would freeze in the second. As a general rule, when we want to hasten the growth, we must water frequently and give very little ventilation. If, to the contrary, we are anxious to slacken the growth, more air must be allowed in and less water poured. In so doing, seedlings of celery effected in the midst of February and which are not to remain in beds, may be transplanted in the open ground by May 15th, in Montreal district, and June 1st in Quebec district. Supposing, however, that the frost was to be feared at those dates, we should then, if the plants were forcing too much, practice pinching, or let them make a stage in cold beds.

During the month of March, seedlings are made in hot-beds rather than in boxes, and in the manner hereabove indicated. They require the same subsequent care, except for the second transplanting which is suppressed in this case, unless it be found necessary to transplant in cold-beds the plants already pricked

out in hot-beds. Let it be remembered, as we go on, that we must wait until the bed has given its heat before sowing, and that transplanting from one bed to another must not be effected in cold weather.

*Late varieties.*—They are thin-sown in hot-beds, during the month of April. In places where the vegetation season is short, it is preferable to sow at the beginning of the month. Though not necessary at this time to transplant the seedlings, so as to hinder them from growing high, we well however, have to do it before setting them in place, if we want to obtain vigorous plants (1)

#### Soil :

Celery needs, in order to well develop and keep, a fresh soil, mellowed deep, well provided with compost or plantaneously manured, and requires to be frequently and abundantly watered. Turfy lands whose acidness will have been corrected by liming and sandy-argillous soils provided with dampness are those which suit better its requirements.

The ground must be prepared in the autumn! After manure has been spread at the rate of 10 to 15 tons per acre, it is buried by ploughing, 8 to 10 inches deep. The following spring, decomposed manure or a complete fertilizer (600 to 800 lbs per acre) will be spread, or else bone powder, which will be worked into the soil by two good harrowings, one of which will be made with a disk-harrow and the other with a finishing harrow. When the soil has thus been loosened to a depth of 6 inches, we will only have to use the roller at the time of permanent plantation.

Watering will commence immediately after planting, accordingly, it will be necessary to procure the material required to do so when needed, and to make up for dampness in case of dry weather, as celery needs plenty of water.

#### Plantation :

Celery must be planted when the weather is damp or cloudy, or immediately prior or after a rainfall (2) but we will take care not to do so when the sun is burning-hot. Before lifting, the plants should be well watered so that they may be transplanted easily with the lump of earth adhering to the roots of each of them, thus facilitating their retaking.

As to their disposition in the open ground, it differs according to the area of the ground under cultivation, the nature of the soil and also according to varieties. Hence, three different modes of plantation:

(1) Most failures in celery culture usually come from the fact that seedlings have not been well done or followed. So the lector well be thankful to us for having paid so much importance to minor details.

(2) A few hours after a rainfall when in a light ground, but wait until it has well dried up when in a heavy soil.

1.—*Plantation in drills.*—It consists in digging, at 3 ft distance, trenches 12 inches deep, in the bottom of which a 3 inch coat of decomposed manure is laid down which is recovered by another layer of rich soil of the same thickness. Then we place at 6 or 8 inches interval (1) the celery plants which are firmly set to the ground by pressing the earth around the roots. When weeding and hosing, the earth will crumble little by little on each side of the plants, so that the trenches will require to be filled for blanching when time comes. This method, which will give excellent results in very light grounds is rather appropriate to celery culture for home use than for a culture of any great extent.

2.—*Plantation in rows.*—This is the most recommendable method for extensive plantations. After the ground has been leveled by raking or rolling, parallel furrows, oriented from north to south are dug to a depth of 2 inches, 3 to 4 feet apart, according to the blanching method to be used and whether the rows will be either single or double.

In heavy grounds, where celery can be blanched only by using boards or cylinders made of thick paper, we must not allow more than 3 feet between the rows and 8 to 10 inches between the plants. It is however, the mode of plantation preconised for early celery.

In light grounds, where the plants can be earthened up for blanching, plantation in double rows is preferable. The double row, which is particularly appropriate to early celery, is formed of two parallel furrows, drawn at a distance of 8 inches, wherein the plants are spaced 8 to 10 inches. A distance of 4 ft must be left between each double row, so that a horse may be used for sowing, watering and earthing up.

In both cases, the plants grubbed from the bed with the lump of earth adhering to the roots, are placed side by side in a small portable low side box, and taken to the place where they are set at the required distance with a dibble, taking care to cover the root up to the collar, and press the earth firmly around them.

3.—*Dense plantation.*—This new method, which consists in planting the celery 8 inches apart in all directions, requires a very rich and damp soil. As soon as the plants have grown to a certain height, their foliage interweaves, so that the light, being excluded, their stems whiten without it being necessary to intervene in their blanching. For this purpose, varieties which are known to be self-blanching (Golden Celery, White Plume) are most commonly used. This process is very advantageous as it requires little labor. Celery thus obtained, however, is thinner and not so hard as the one that has been blanched up.

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(1) As a general rule, the more the plants are distant, the greater development they reach. However early varieties must be planted closer than late varieties. Nevertheless, we will also be governed by the area of the ground at our disposal.

### Cultivation :

From the time of setting the celery plants to their earthing up, it will be necessary to water, till and cultivate frequently, so as to hasten their vegetation and to maintain their vigorous growth; for if they only had to suffer a little of dryness, of noxious weeds or of the hardening of the soil, their ribs would soon become fibrous and of no value for consumption.

*Watering.*—The frequency of waterings will vary according to the degree of dampness of the soil which must not be allowed to dry. As soon as the foliage will give sufficient shadow to slacken the evaporation at the root of the plants, we will water less frequently and not so abundantly as in the start.; because an excess of water might then occasion rust. Watering systems differ with the area under cultivation. In the case of small cultures, the watering can, the turnpike or a spouting hose will suffice, whereas we will have to resort to an irrigation system for extensive cultures.

*Weeding.*—It is especially when the plants are young that the weeds are to be found prejudicial. Accordingly they will have to be destroyed as soon as they appear. For this purpose, a hoe may be used between the rows, but hand-weeding will have to be made between the plants.

*Hoeing.*—The frequency of hoeings changes with the nature of the soil. In fact, it is clear that we will have to hoe more frequently the surface of a heavy ground than that of a light soil. As a rule, in dry weather, it is necessary to use a horse cultivator or a two-wheel hoe once a week between the rows, so as to keep the level of the earth perfectly loose. In the start, it will be possible, without any danger to the roots, to proceed slightly with the machine, very near to the plants, but we will have to keep farther from them from one time to another as the foliage is spreading out.

### Blanching :

We have already said previously, that the celery plant, of any variety, must be blanched by etiolation before being placed on the market. This end is obtained in preventing the light from reaching the ribs of the plant. We can readily see that the methods of blanching will differ with early or late varieties of celery, according to the nature of the ground and the mode of plantation.

*Early celery.*—When planted in drills, in single or double rows, it will be necessary to exclude the light about three weeks before its maturity, In light grounds, the hilling up process is the most commonly used for a culture of a small area. It consists in bringing up the earth around each plant, at one third of the height for the first time, at the two-thirds, eight days later, and then up to the crown of the leaves after the following week. While making this operation which must be done in a dry weather and with the help of a scraper.

or of a double mould-board plough care must be taken to tie at the top; the stalks of each of the plants, so as to prevent the earth from penetrating inside, thereby occasioning the heart-rot.

Many claim that early celery banked in this way will be inclined to rot during the great summer heats and rather advise the use of boards, of tile or weather proof paper cylinders. Others who have always used the former process hold for the contrary. In this, there is ground for discussion. It is certain however that the use of boards is more appropriate to commercial cultures, because it permits to save on labor and moreover, the cause of the danger already pointed out is thereby suppressed. It is furthermore, the only recommendable process for blanching the celery planted in heavy grounds, the use of cylinders being too expensive. However, blanching by means of boards, or by thick plantation will not result in obtaining celery stalks as hard, juicy and crispy as those of celery banked in light ground. These boards which shall be one inch thick, 12 ft long and 8 to 12 inches wide, according to the height of the plants, are set in position obliquely on each side of the row and firmly kept in place by means of stakes, so that the ribs of the plants of celery will be pressed between the two boards, from the bottom to the top, only the bunch of their leaves being allowed to spread out.

It sometimes happens that the boards at our disposal are not wide enough to reach the foliage. This is remedied by rising them to the necessary height by banking.

If the openings are well closed, celery can be blanched in 15 to 25 days.

Early celery, sown late, can be kept until January if desired. For this purpose it will be rooted out and stored in a cellar, instead of being allowed to blanch in the open ground. The cellar must be rather cool than dry, without being too damp, however. If no sand is to be found, it will be necessary to spread a layer of same, 4 to 6 inches thick and slightly wet, in the best lighted place of the cellar and a bundle of straw will be brought near by. The plants will then be unrooted in dry enough weather and taken into the cellar where they will be disposed obliquely, 2 inches apart, in rows alternately divided by 6 inches thick of straw, after their roots have been previously buried in the sand up to the collar. The height of straw rows must not exceed that of the heart of the celery plants. Afterwards, no watering will be made. About 3 or 4 weeks before being sent to the market, it will be necessary to thoroughly cover the celery plants with 6 inches thick of straw so as to force its blanching.

*Late celery.*—The vegetation season is usually too short to permit of its blanching in the open ground. Moreover, it would be taking useless pains if celery was only to be sold or consumed during the winter months, seeing that it blanches just as quickly in the cellar, and that it keeps better in storage when green than when blanched.

The pulling out is done before the coming of autumn frosts and in dry

weather. While operating care must be taken not to bruise the stems and not to shake the earth which adheres to the roots. They are afterwards taken to a cellar or a well ventilated bin, hardly lighted and where the temperature is rather cool than dry. If the soil is hardened or if a floor is in existence, 6 or 8 inches of sand will be spread, in which we will dig, 4 or 6 inches apart, small trenches where we will dispose, side by side, the celery plants whose roots will be covered with earth by strongly pressing around the collar, and managing to have, at every 6 feet, a small alley to permit of circulation when needed. We will have to see that the sand does not dry up. Should watering prove necessary, care must be exercised not to moisten the stems as this would be sufficient to occasion rot.

Large celery growers generally use for its keeping well ventilated storage-pits in which the temperature is continually maintained at 35° Fahrenheit.

#### Packing :

Celery plants for the market must be deprived of their roots, carefully washed, tied in dozen bunches and then packed in crates if they are to be shipped away.

The picture on the front page gives a good idea of the manner of cutting the roots and of tying the plants in bunches.

When packing, the selection of celery must be made so that only plants of uniform size and color will be placed in the same bunch or crate. The bunches can be tied up with rafia, or with a narrow fancy ribbon for first choice celery. The crates generally used measure 2 feet on each side by 20 inches in height.

#### Seed-Plants :

Anyone who grows several varieties of celery at one time and one neighboring the other, must renounce to gather the seed, seeing that they cross-breed one another, it then being impossible for him to obtain identical plants to the original ones. When there is no danger of this nature, when pulling out the plants in the autumn, a choice will be made, amongst late celery plants, of those that are found to be the most vigorous, sound, the ribs of which are the hardest, and are a best representation of the type of the variety. After the foliage has been severed, they are placed in a cold spot of a cellar, where freezing is not to be feared, and buried separately in the sand up to the heart. The following spring, when the frosts have gone, all the rotten spots are taken off, and plantation is made at the same height, in a sandy ground, rich and well loosened, 2 ft apart in all directions. Cultural attention, weeding, hoeing and watering are imperative up to the maturing time of the seeds. So as to force the celery to give seeds and to hasten its ripening, the first shoot of the stems will be cut as soon as the latter are well developed. As they ripen, the seed-carrier stems are unrooted and placed in a room well lighted by the sun. When they are dry, the seeds are taken off with the hand, winnowed, placed in envelopes and kept in a dry place of no access to rodents.

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Diseases :

If it only suffers a little from dryness or of too much dampness, the celery is inclined to contract the following diseases which may sometimes cause considerable damage in large plantations; if we do not take the necessary stems to prevent them or to treat them in due time.

Though it is occasionally possible to check the disease at its beginning by destroying the ill plants or in suspending or increasing the waterings, it is always safer to have recourse to pulverisations to strive effectively against it.

*Celery rust.*—It is determined by a fungus (*Puccinia Apii*) which affects the leaves in the aspect of yellow spots, turning later on to a reddish-brown color, which spread rapidly.

Prevention: never cultivate the celery when the leaves are wet.

Apply, every fifteen days, dating from the first transplanting in bed, Bordeaux mixture solutions, at a dose of 3.3.50 up to the time of earthing up.

*Blight or yellow spot of the leaves.*—Occasioned by the fungus *Cercospora Apii*. Grayish spots firstly appear under the leaves and very soon after on the ribs which decay almost immediately.

Prevention: No watering or hoeing must be made in wet warm weather; growth must be kept vigorous.

Insects :

Celery numbers many enemies amongst those of the biting and sucking classes. Only mentioning the most important, the *fly* and the *celery caterpillar*, the *leaf-tyer* and the *plant lice* as well as the rodents (rats, field-mice) cause damage to the plants. As poisonous substances cannot be applied on the plants, we must satisfy ourselves in destroying them and in taking out the damaged spots.

**CELERIAC**

**ROTATION : 2nd YEAR**

The celeriac or turnip-rooted celery is not grown for the ribs of its leaves which are hollow, but for its stump which is tuberous and which reaches 4 inches in diameter. It is to be regretted that this plant is not better known in this country, as seasoned with juice, it constitutes a very delicious vegetable. It is also edible in salad added with vinegar.

It requires the same care and cultivation as ribbed-celery, excepting, however, that it does not need to be blanched. It will be possible, when setting in the open, to plant same in rows 18 to 24 inches distant, plants being 8 or 10 inches apart. During the growth it will require to be earthen up once and a while, so that the stump will never be left exposed. When ripe, it is kept in cellar, mixed with sand.

The best varieties of celeriac are: Paris Improved, Erfurt which is very early and Giant of Prague.

